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SEARCH RESULTS

Celazole® PBI (CM), Polybenzimidazole, unfilled, compression molded

Search Categories: Polybenzimidazole; Bearing;

Material Notes: Celazole® PBI is the highest performance engineering plastic available from Quadrant EPP. It of the highest mechanical properties of any thermoplastic above 400° F (205° C). Celazole is ideal for high heat bushings, connectors and valve seats. Celazole is extremely hard and can offer a challenge to fabricate. Fabricat instructions can be furnished by Quadrant EPP.

Available today. It offers the highest heat resistance and mechanical property retention over 400°F (205°C) of an unfilled plastic. It has better wear resistance and load carrying capabilities at extreme temperatures than any othe reinforced or unreinforced advanced engineering plastic.

As an unreinforced material, Celazole PBI is very "clean" in terms of ionic impurity and it does not outgas (except water). These characteristics make this material very attractive to semiconductor manufacturers for vacuum char applications. Celazole PBI has excellent ultrasonic transparency which makes it an ideal choice for parts such as probe tip lenses in ultrasonic measuring equipment.

Celazole PBI is also an excellent thermal insulator. Other plastics in melt do not stick to PBI. These characteristic make it ideal for contact seals and insulator bushings in plastic production and molding equipment.

MECHANICAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Specific Gravity	1.3	ASTM D792	1.3
Tensile Strength, psi	20000	ASTM D638	138 MPa
Tensile Modulus, psi	850000	ASTM D638	5,861 MPa
Elongation, %	3	ASTM D638	3 %
Flexural Strength, psi	32000	ASTM D790	221 MPa
Flexural Modulus, psi	950000	ASTM D790	6,550 MPa
Compressive Strength, psi	50000	ASTM D695, 10% Def.	345 MPa
Compressive Modulus, psi	900000	ASTM D695	6,206 MPa
Hardness, Rockwell E	105	ASTM D785	105
Hardness, Rockwell M	125	ASTM D785	125
Hardness, Durometer, Shore D Scale	94	ASTM D2240	94
Izod Impact (Notched), ft-lb/in	0.5	ASTM D256 Type A	27 J/m
Coefficient of Friction, Dynamic	0.24	Dry vs. Steel, PTM55007	0.24
Limiting PV, psi-fpm	37500	PTM55007	1.3 MPa-m/se
k (wear) factor, 10^{-10} in^3-min/lb-ft-hr	60	PTM55007	60 10^{-10}in^3-min/lb-ft-hr
THERMAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Coefficient of Thermal Expansion, 10E-4/°F	0.13	ASTM E831 (TMA)	0.23 10^{-4}/K

NOTE →

Deflection Temperature 264 psi, °F	800	ASTM D648	427 °C
Tg-Glass Transition (Amorphous), °F	750	ASTM D3418	399 °C
Continuous Service in Air (Max), °F	600	Without Load	316 °C
Thermal Conductivity, BTU-in/hr-ft²-°F	2.8		0.40 W/m-K
ELECTRICAL PROPERTIES	VALUES	COMMENTS	METRIC VALUES
Dielectric Strength, Short Term, Volts/mil	550	ASTM D149(2)	22 kV/mm
Surface Resistance, Ohm/Square	1E+13	Lower Limit; EOS/ESD S11.11	1E+13 Ohm/Square
Dielectric Constant, 1 MHz	3.2	ASTM D150(2)	3.2
Dissipation Factor, 1 MHz	0.003	ASTM D150(2)	0.003
CHEMICAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Water Absorption Immersion, 24 hr., %	0.4	ASTM D570	0.4 %
Water Absorption Immersion Sat, %	5	ASTM D570	5 %
Acids, Weak (acetic, dilute HCl)	2	Limited Service	2
Acids, Strong (conc. HCl or sulfuric)	1	Unnacceptable	1
Alkalies, Weak (dilute NaOH)	2	Limited Service	2
Alkalies, Strong (conc. NaOH)	1	Unnacceptable	1
Hydrocarbons, Aromatic (toluene)	3	Acceptable Service	3
Hydrocarbons, Aliphatic (gasoline)	3	Acceptable Service	3
Ketones, Esters (acetone)	3	Acceptable Service	3
Ethers (diethyl ether, THF)	3	Acceptable Service	3
Chlorinated Solvents (methylene chloride)	3	Acceptable Service	3
Alcohols (methanol, anti-freeze)	3	Acceptable Service	3
Inorganic Salt Solutions (NaCl, KCl)	3	Acceptable Service	3
Continuous Sunlight	2	Limited Service	2
Steam	1	Unnacceptable	1
COMPLIANCE	ENGLISH VALUES	COMMENTS	METRIC VALUES
Flammability, UL94 (5=V-0; 4=V-1; 3=V-2; 1=HB)	5 (V-0)	UL94	5
FDA (1=Yes)	0	Not Compliant	0
USDA (1=Yes)	0	Not Compliant	0
NSF (1=Yes)	0	Not Compliant	0
3A-Dairy (1=Yes)	0	Not Compliant	0
Canada AG (1=Yes)	0	Not Compliant	0
USP Class VI (1=Yes)	0	Not Compliant	0

This is the only polybenzimidazole available from Quadrant Engineering Plastics Products.

Please read our disclaimer regarding materials data.

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Introduction

Properties of common **solid** materials are divided into following categories:

- Physical properties: Density, melting and boiling temperature.
- Mechanical Properties: Including basic mechanical properties, such as elastic modulus, shear modulus, Poisson's ratio, and mechanical strength properties, i.e., yielding stress, ultimate stress, elongation.
- Thermal Properties: Coefficient of thermal expansion, thermal conductivity.
- Electric Properties: Electric resistivity.
- Acoustic Properties: Compression wave velocity, shear wave velocity, bar velocity.

Note:
1. All properties are under **1 atm** (1.01325×10^5 Pa; 760 mmHg; 14.6959 psi) and at room temperature **25 °C** (77 °F) unless specified otherwise.
2. Further information on a specific material can be obtained by clicking the **name** of that particular material in the following table.
3. Users who prefer Standard or other unit systems rather than the SI units, click the **amount** (number) of the specific material property for unit conversion.
4. Materials in different phases at room temperature: **Liquid**, **Gas**.

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Thermal Properties

Material	Thermal Expansion Coefficient ($\times10^{-6}$/°C)	Thermal Conductivity (W/m·K)
Aluminum [Al]	23.0	237
Aluminum Alloy	23.0	-
Brass	19.1 - 21.2	-
Brass; Noval	21.1	-
Brass; Red (80% Cu, 20% Zn)	19.1	-
Brick	5.00 - 7.00	-

NOTE ——→

Bronze; Regular	18.0 - 21.0	-
Bronze; Manganese	20.0	-
Concrete	7.00 - 14.0	-
Copper [Cu]	16.6 - 17.6	410
Copper Alloy	17.0	-
Glass	5.00 - 11.0	-
Gold [Au]	-	317
Iron [Fe]	-	80.2
Iron (Cast)	9.90 - 12.0	-
Iron (Wrought)	12.0	-
Lead [Pb]	-	35.3
Magnesium [Mg]	25.2	156
Magnesium Alloy	26.1 - 28.8	-
Monel (67% Ni, 30% Cu)	14.0	-
Nickel [Ni]	13.0	90.7
Nylon; Polyamide	75.0 - 100	-
Platinum [Pt]	-	71.6
Rubber	130 - 200	-
Silicon [Si]	-	148
Silver [Ag]	-	429
Solder; Tin-Lead	-	30.0 - 49.8
Steel	10.0 - 18.0	-
Tin [Sn]	-	66.6
Titanium [Ti]	-	21.9
Titanium Alloy	8.00 - 10.0	-
Tungsten [W]	4.30	174
Zinc [Zn]	30.2	116